



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,104	01/30/2004	Catalin D. Sandu	MSFT122167	9006

27195 7590 09/22/2008  
AMIN. TUROCY & CALVIN, LLP  
24TH FLOOR, NATIONAL CITY CENTER  
1900 EAST NINTH STREET  
CLEVELAND, OH 44114

EXAMINER
----------

HAILU, TESHOME

ART UNIT	PAPER NUMBER
----------	--------------

2139

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

09/22/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket1@thepatentattorneys.com  
hholmes@thepatentattorneys.com  
lpasterchek@thepatentattorneys.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/769,104	<b>Applicant(s)</b> SANDU ET AL.	
	<b>Examiner</b> TESHOME HAILU	<b>Art Unit</b> 2139	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 27, 2008 has been entered.
2. Claims 1-20 have been amended. Claims 1-20 are pending.

***Response to Amendment***

3. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-6, 9-10, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hursey et al (Hursey) (US Pub. No. 2003/0074573) in view of Desai (US Pub. No. 2003/0188189).

As per claim 1 Hursey discloses:

A computer-implemented malware detection system for determining whether an executable script is malware according to its functionality, the malware detection system comprising: (page 1, paragraph 2,

this invention relates to the field of data processing systems. More particularly, this invention relates to scanning for malware, such as, for example, computer viruses, Trojans, worms, banned files and banned words within e-mail messages).

A malware signature store including at least one known malware script signature, wherein each malware signature in the malware signature store is a normalized signature of a known malware script; (page 2, paragraph 22, the anti-virus scanning system 8 incorporates the virus definitions 12 in the form of uncompressed virus signatures (malware signatures) 17. These virus signatures 17 might typically correspond to a sequence of twenty or so byte values that are indicative of a particular piece of malware. These uncompressed virus signatures 17 may be compressed using the coding table from the compressed computer file 16 to yield compressed virus signatures 18) and (page 2, paragraph 28, It would also be possible to compress all the uncompressed virus signatures as one task and then use this library of compressed virus signatures to search the compressed computer file).

Wherein the malware detection system is configured to: compare the normalized signature of tile executable script to the at least one normalized malware signature in the malware signature store to determine whether the executable script is malware; (abstract, line 1-6, A malware scanner (8) operates to scan compressed computer files (16) by compressing the malware signatures (17) using the same compression algorithm as used for the compressed computer file and then comparing the compressed malware signatures (18) with the compressed computer file directly). According to Hursey, the signature of known virus is compressed in order to change the signature to a common format as the incoming compressed computer files.

Report whether the executable script is malware according to the determination. (Page 2, paragraph 26, Step 38 determines whether or not a match has occurred between the compressed virus signature and the compressed computer file. If a match has occurred, then the anti-virus actions are triggered at step 40. These anti-virus actions may include deletion, quarantine, repair, alert message generation etc).

A normalization module that obtains an executable script and generates a normalized signature for the executable script, wherein generating a normalized signature for the executable script comprises

translating tokens from the executable script into normalized tokens conforming to a common format; (abstract, line 1-6, A malware scanner (8) operates to scan compressed computer files (16) by compressing the malware signatures (17) using the same compression algorithm as used for the compressed computer file and then comparing the compressed malware signatures (18) with the compressed computer file directly).

Hursey does not explicitly disclose about normalization module. However, in the same field of endeavor, Desai teach this limitation as, (page 3, paragraph 51, the events are normalized against a common standard (e.g., fields re-ordered and adjusted for size, data type, format, etc.), and assigned a Category based upon origination) and (page 3, paragraph 52, after the normalization process, a search for a match may be conducted against a Known Offender or attack signature database. As the name implies, the attack signature database contains "known" signatures from prior and previously encountered attacks. If a "match" is found, an alert is generated).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention was made, to modify the teaching of Hursey and include the normalization module using the teaching of Desai in order to modify the incoming data and generate a normalized data in a common format as the known malware signature stored in the database.

Claims 3, 4 and 5 are rejected under the same reason set forth in rejection of claim 1:

As per claim 2 Hursey in view of Desai discloses:

The malware detection system of Claim 1, further comprising a comparison module, wherein the comparison module compares the normalized signature of the executable script to the at least one normalized malware signature in the malware signature store. (abstract, line 1-6, A malware scanner (8) operates to scan compressed computer files (16) by compressing the malware signatures (17) using the same compression algorithm as used for the compressed computer file and then comparing the compressed malware signatures (18) with the compressed computer file directly).

Claims 10, 13 and 17 are rejected under the same reason set forth in rejection of claim 2:

As per claim 6 Hursey in view of Desai discloses:

The malware detection system of Claim 2, wherein translating tokens from the executable script into a common format suitable for comparison with the at least one malware signature in the malware signature store comprises renaming tokens from the executable script according to a common naming convention. (Page 2, paragraph 22, the anti-virus scanning system 8 incorporates the virus definitions 12 in the form of uncompressed virus signatures (malware signatures) 17. These virus signatures 17 might typically correspond to a sequence of twenty or so byte values that are indicative of a particular piece of malware. These uncompressed virus signatures 17 may be compressed using the coding table from the compressed computer file 16 to yield compressed virus signatures 18).

As per claim 9 Hursey in view of Desai discloses:

The malware detection system of Claim 6, wherein generating a normalized signature for the executable script further comprises generating a set of normalized tokens for each routine in the executable script. (Abstract, line 1-6, A malware scanner (8) operates to scan compressed computer files (16) by compressing the malware signatures (17) using the same compression algorithm as used for the compressed computer file and then comparing the compressed malware signatures (18) with the compressed computer file directly).

6. Claims 7-8, 11-12, 14-16 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hursey et al (Hursey) (US Pub. No. 2003/0074573) in view of Desai (US Pub. No. 2003/0188189) and further in view of Milliken (US Pub. No. 2004/0064737).

As per claim 7 Hursey in view of Desai discloses:

The malware detection system of Claim 6 further configured to: determine whether the executable script is malware according to a comparison between the second normalized signature and at least one

second normalized signature in the malware signature store. (Page 2, paragraph 26, Step 38 determines whether or not a match has occurred between the compressed virus signature and the compressed computer file. If a match has occurred, then the anti-virus actions are triggered at step 40. These anti-virus actions may include deletion, quarantine, repair, alert message generation etc).

Generate a second normalized signature for the executable script, wherein generating a second normalized signature comprises translating tokens from the executable script into a second common format suitable for comparison with a second normalized malware signature of known malware in the malware signature store; (abstract, line 1-6, A malware scanner (8) operates to scan compressed computer files (16) by compressing the malware signatures (17) using the same compression algorithm as used for the compressed computer file and then comparing the compressed malware signatures (18) with the compressed computer file directly). According to Hursey, the signature of known virus is compressed in order to change the signature to a common format as the incoming compressed computer files. Also according to the invention, normalization is defined as, (page 3, paragraph 29, what is meant by "normalizing" the executable script 208 is to translate the functional contents of the executable script 208 into a common, "normal" format, referred to as a script signature).

If the prior determination indicates that the executable script is a partial match to at least one malware signature in the malware signature store: (page 2, paragraph 26, Step 38 determines whether or not a match has occurred between the compressed virus signature and the compressed computer file).

Hursey in view of Desai fails to disclose about partial match. However, in the same field of endeavor, Milliken teaches this limitation as, (page 7, paragraph 74, non-polymorphic viruses and worms may also be detected somewhat more quickly by these techniques because block alignment is not the same in every packet and partial matches will be more common early in the appearance of the virus/worm in the network, at least for longer packets).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention was made, to modify the teaching of Hursey in view of Desai and include the partial match using the teaching of Milliken in order to minimize the time and cost of virus detection.

Claims 11, 14 and 18 are rejected under the same reason set forth in rejection of claim 7:

As per claim 8 Hursey in view of Desai and further in view of Milliken discloses:

The malware detection system of Claim 7, wherein translating tokens from the executable script into a second common format suitable for comparison with a second normalized malware signature of known malware in the malware signature store comprises translating tokens of the executable script into a common name according to each token's type. (Page 2, paragraph 22, the anti-virus scanning system 8 incorporates the virus definitions 12 in the form of uncompressed virus signatures (malware signatures) 17. These virus signatures 17 might typically correspond to a sequence of twenty or so byte values that are indicative of a particular piece of malware. These uncompressed virus signatures 17 may be compressed using the coding table from the compressed computer file 16 to yield compressed virus signatures 18).

Claims 12, 15 and 19 are rejected under the same reason set forth in rejection of claim 8:

As per claim 16 Hursey in view of Desai and further in view of Milliken discloses:

The method of Claim 14 further comprising comparing the second normalized signature for the executable script to second normalized signatures of known malware to determine whether the second normalized signature for the executable script is a partial match to a second normalized signature of known malware, and if so, reporting that the executable script is potential malware. (Page 2, paragraph 26, Step 38 determines whether or not a match has occurred between the compressed virus signature and the compressed computer file).

Hursey in view of Desai fails to disclose about partial match. However, in the same field of endeavor, Milliken teaches this limitation as, (page 7, paragraph 74, non-polymorphic viruses and worms may also be detected somewhat more quickly by these techniques because block alignment is not the same in every packet and partial matches will be more common early in the appearance of the virus/worm in the network, at least for longer packets).



Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention was made, to modify the teaching of Hursey in view of Desai and include the partial match using the teaching of Milliken in order to minimize the time and cost of virus detection.

Claim 20 is rejected under the same reason set forth in rejection of claim 16:

### ***Conclusion***

7. The prior art made or record and not relied upon is considered pertinent to applicant's disclosure.  
TITLE: Scripting virus scan engine, US 7,398,553.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TESHOME HAILU whose telephone number is (571)270-3159. The examiner can normally be reached on Mon-Fri 7:30a.m. to 5:00p.m. PST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kristine L. Kincaid can be reached on (571) 272-4063. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Teshome Hailu  
September 11, 2008

/Kristine Kincaid/  
Supervisory Patent Examiner, Art Unit  
2139

Application/Control Number: 10/769,104  
Art Unit: 2139

Page 9